Mrs. Hayden

NAME Key

Piecewise Functions

1. $f(x)=\begin{cases} x+1 & \text{if} \quad 0 \le x < 5 \\ 2x-4 & \text{if} \quad 5 \le x < 10 \end{cases}$

① $f(x)=x+1$

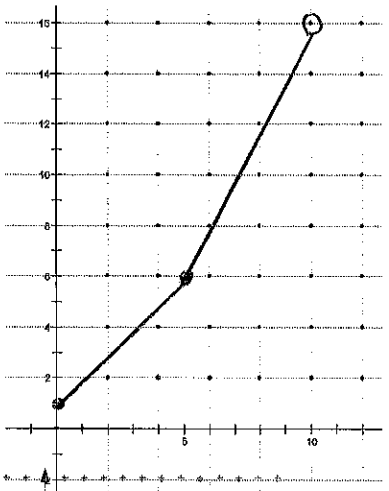
x	f(x)
0	1
5	6

② $f(x)=2x-4$

5	6
10	16

Domain: $0 \le x < 10$

Range: $1 \le f(x) < 16$



Interval Notation

D: [0, 10)

R: [1, 16]

2. $f(x)=\begin{cases} 4x & \text{if} \quad 0 \le x < 2 \\ -2x+10 & \text{if} \quad 2 \le x < 5 \\ 2 & \text{if} \quad 5 \le x < 10 \end{cases}$

① $g(x)=4x$

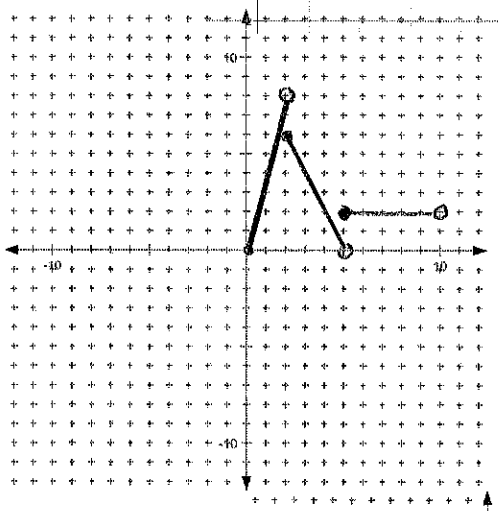
0	0
2	8

② $g(x)=-2x+10$

2	6
5	0

③ $f(x)=2$

5	2
10	2



3. $k(x)=\begin{cases} 2x+3 & \text{if} \quad x < 4 \\ x-1 & \text{if} \quad 4 \le x \le 9 \end{cases}$

① $k(x)=2x+3$

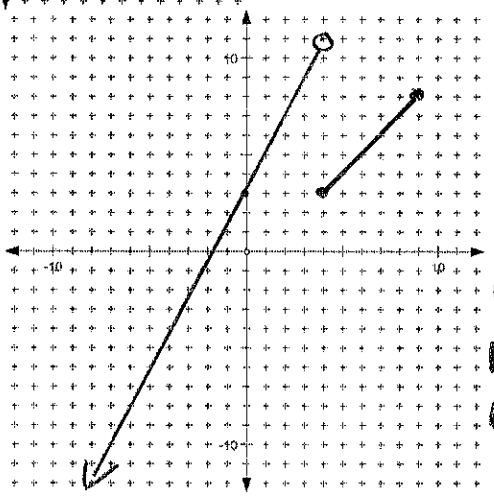
x	
4	11
0	3

$k(x)=x-1$

4	3
9	8

Domain: $x \le 9$

Range: $k(x) < 11$



D: $(-\infty, 9]$

R: $(-\infty, 11)$

4. $b(x)=\begin{cases} 2 & \text{if} \quad x < 1 \\ 2x & \text{if} \quad 1 \le x \le 3 \\ 7-\frac{1}{3}x & \text{if} \quad x > 3 \end{cases}$

① $b(x)=2$

1	2
0	2

② $b(x)=2x$

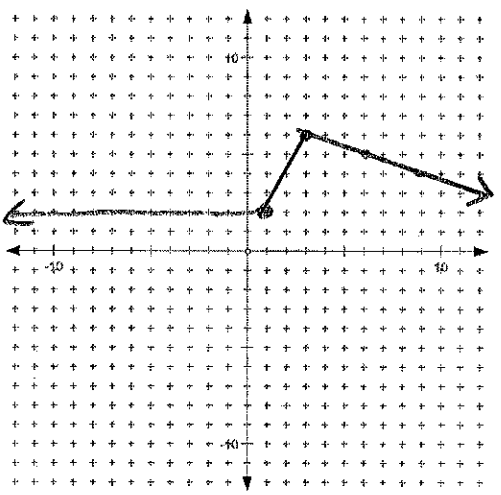
1	2
3	6

③ $b(x)=7-\frac{1}{3}x$

3	6
6	5
9	4

Domain: $\mathbb{R}$

Range: $b(x) \le 6$



D: $(-\infty, +\infty)$

R: $(-\infty, 6]$

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① $h(x) = -2$

0	-2
-5	-2

② $h(x) = x+1$

0	1
10	11

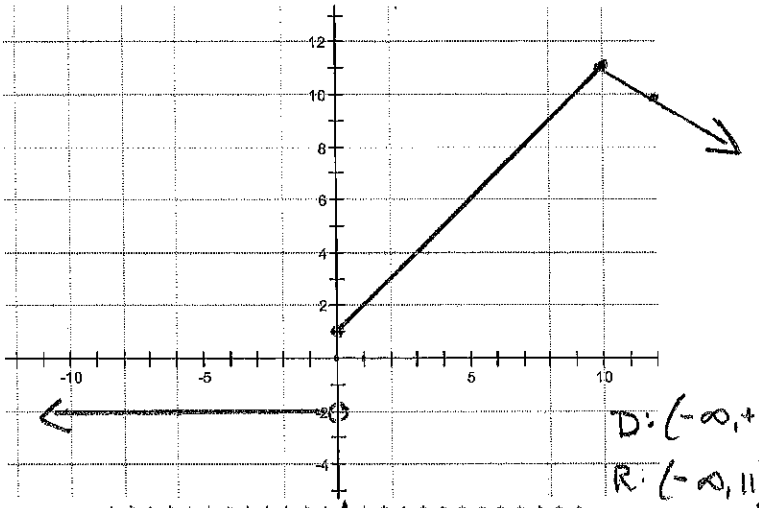
③ $h(x) = -\frac{1}{2}x+16$

10	11
12	10

5. $h(x) = \begin{cases} -2 & \text{if } x < 0 \\ x+1 & \text{if } 0 \le x \le 10 \\ -\frac{1}{2}x+16 & \text{if } x > 10 \end{cases}$

Domain: $\mathbb{R}$

Range: $h(x) \le 11$



D: $(-\infty, +\infty)$

R: $(-\infty, 11]$

① $c(x) = -5-x$

2	-7
0	-5

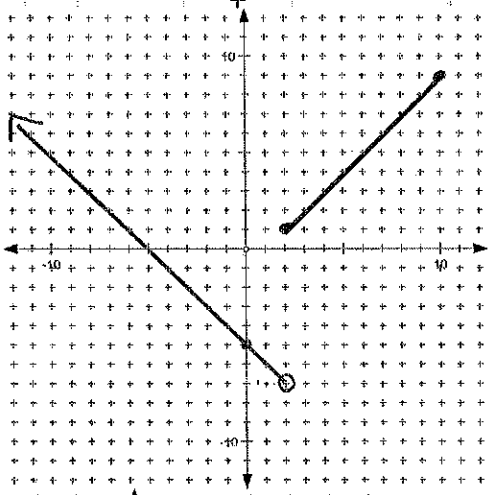
② $f(x) = x-1$

2	1
10	9

6. $f(x) = \begin{cases} -5-x & \text{if } x < 2 \\ x-1 & \text{if } 2 \le x \le 10 \end{cases}$

Domain: $x \le 10$

Range: $f(x) > -7$



D: $(-\infty, 10]$

R: $(-7, +\infty)$

① $f(x) = 3x+5$

-1	2
2	11

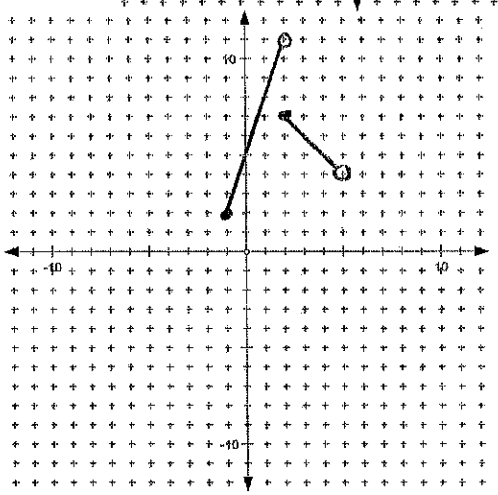
② $f(x) = -x+9$

2	7
5	4

7. $f(x) = \begin{cases} 3x+5 & \text{if } -1 \le x < 2 \\ -x+9 & \text{if } 2 \le x < 5 \end{cases}$

Domain: $-1 \le x < 5$

Range: $2 \le f(x) < 11$



D: $[-1, 5)$

R: $[2, 11)$

① $g(x) = [\![x]\!]$

-3	-3
0	0
1	1
1.5	1
2	2 upper bracket

-2.9, -3

② $g(x) = x$

-3	-3
-5	-5
-7	-7

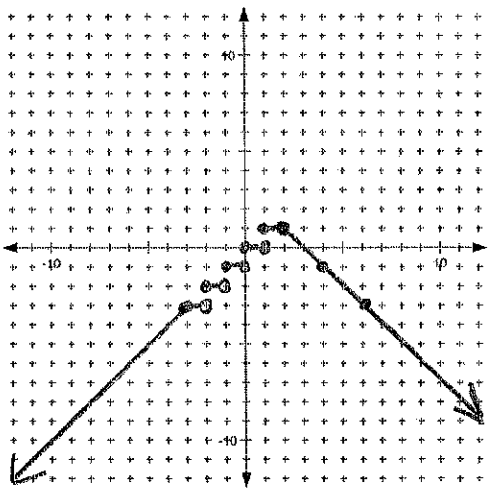
③ $g(x) = -x+3$

2	1
4	-1
6	-3

8. $g(x) = \begin{cases} [x] & \text{if } -3 < x < 2 \\ x & \text{if } x \le -3 \\ -x+3 & \text{if } x \ge 2 \end{cases}$

Domain: $\mathbb{R}$

Range: $g(x) \le 1$



D: $(-\infty, +\infty)$

R: $(-\infty, 1]$